UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/667,273	09/17/2003	Brian J. Seibel	110003.00018.03AB035	8655

7590 04/05/2005

Susan M. Donahue
Rockwell Automation, Inc.
1201 South Second Street, 704-P
Milwaukee, WI 53204

EXAMINER	
LEYKIN, RITA	

ART UNIT	PAPER NUMBER
2837	

DATE MAILED: 04/05/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

SM

Office Action Summary	Application No.	Applicant(s)	
	10/667,273	SEIBEL ET AL.	
	Examiner	Art Unit	
	Rita Leykin	2837	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *24 January 2005*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-39* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,2,4,7,15-18,20,23 and 29* is/are rejected.

7)☒ Claim(s) *3,5-10,19-28 and 30-39* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Response to Amendment

This office action is in response to amendment filed on 01/24/05. Applicant's arguments have been considered.

With respect to claims 1, 4, 17, 20 and 29 the examiner disagreed, because the broadest interpretation has been given to claimed language. It is the examiner position that Lipo US#4,724,373 in Fig. 9 discloses limitations of the above claims including torque command signal that is provided via output signals of the inverter 101. Hence, in Lipo:

- The feedback current value is presented in form of current signals obtained from transformers 103;
- Mathematical calculations of d and q currents arrived from circuit 109 that receives the output signals from transformers 103;
- The signals indicative of d and q currents, are provided to the circuit 110, which calculates the electromagnetic torque Te, and provides an output signal to summer 112, which subtracts the measured, actual torque Te from the reference torque signal Te* to provide an error signal on line 113. Lipo teaches that the above error signal on lines 113 can be utilized to control the inverter 101 to maintain the motor 100 at a preferred, in other words commanded, level of torque, (see column 10, lines 11-48);
- Lipo utilizes a flux measurement signals and calculates the instantaneous torque signals. The error signal is provided to the torque error signal commutation circuit

115 that is coupled to inverter 101. The chain of the above signals is indicative of torque that may be directly compared with a desired input torque signal to provide a feedback error signal which can be supplied to control inverter to drive the motor to achieve desired torque, (see column 2, lines 61-68).

With respect to claims 2 and 18, the q axis feedback signal is a part of obtained output signal 111. The commanded or desired torque to operate the motor 100 is based on generating a q-axis command voltage presented as an output of circuit 114 that is used to drive the drive the machine.

With respect to claims 15 and 16, Lipo teaches in column 1, lines 15 that control of AC electrical machines (that is included synchronous machines and permanent magnet motors) have depended upon principle of field orientation.

Based on the above examiner maintains the rejection as follows.

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

1. Claims 1, 2, 4, 15, 16, 18, 20 and 29 are rejected under 35 U.S.C. 103(a) as being unpatentable over by Lipo US # 4,724,373.

With respect to claims 1, 4, 17, 20 and 29 Lipo teaches in Fig. 9 a mathematically operating controller for induction machine wherein, the operation is based on obtained

from current transformers 103 currents, supplied to the motor and wherein the current feedback values are processed and combined mathematically with a torque reference value to mathematically obtain an error signal 113 and to generate torque command for machine operation, (see column 10, lines 21-48). Lipo teaches generating of d and q-axis voltage values and torque error calculation with reference 110, as a function of torque reference command, as in claim 2 and similar.

Lipo teaches generating of d and q- axis voltage values as a function of torque reference command. The torque can be calculated utilizing measurements of voltages in the number of phases sufficient to determine the flux of the machine, (see Fig. 8, and column 9, lines 1-68 and column 10, lines 1-20, column 5, lines 1-65, column 8, lines 53-67). With respect to claims 2 and 18, the q axis feedback signal is a part of obtained output signal 111. The commanded or desired torque to operate the motor 100 is based on generating a q-axis command voltage, presented as an output of circuit 114 that is used to drive the drive the machine via inverter 101.

With respect to claims 15 and 16, Lipo teaches in column 1, lines 15 that control of AC electrical machines (that is included synchronous machines and permanent magnet motors) have depended upon principle of field orientation.

Hence, it has been obvious to one of ordinary skills in the art, at the time invention was made to use Lipo teaching to achieve desired motor torque command value by combining actual motor torque and motor torque reference value to affect inverter output.

The reason is to control motor torque at a desired torque level.

Conclusion

2. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Rita Leykin whose telephone number is (571)272-2066. The examiner can normally be reached on Monday-Friday 8:30-6:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Martin can be reached on (571)272-2107. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Rita Leykin
Primary Examiner
Art Unit 2837

R.L.